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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/452,658	12/01/1999	IKKO FUSHIKI	M61.12-0179	1604

7590 04/23/2003

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EXAMINER
HAVAN, THU THAO

ART UNIT	PAPER NUMBER
2672	18

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/452,658	FUSHIKI ET AL.	
	Examiner	Art Unit	
	Thu-Thao Havan	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *31-38* is/are allowed.

6)☒ Claim(s) *1,3-9,21,22 and 24-26* is/are rejected.

7)☒ Claim(s) *2,10-20,23 and 27-30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Claims **1-38** are pending in the present application.

2. Applicant's arguments filed February 11, 2003 have been fully considered but they are not persuasive. As addressed below, Sayre teaches the claimed limitations.

Sayre discloses describing at least a portion of a base image as a path, the path representing multiple pixels and performing a non-affine transform on the path instead of the multiple pixels represented by the path to produce a transformed path (col. 6, line 50 to col. 7, line 36; col. 11, line 45 to col. 14, line 15; col. 6, line 50 to col. 7, line 36). In other words, Sayre teaches a non-affine image (i.e. path) warping. In that a non-affine image transformation on a source image comprised of defining a warp mesh representing non-affine transformation of source image. Furthermore, Sayre discloses a bicubic mesh is created by splines or other suitable means. In computer graphics a spline is a curve calculated by a mathematical function that connects separate points with a high degree of smoothness. Once a mathematical function had been defined or knots have been moved and an approximating spline generated, then a displacement map is derived from the mathematical mapping, or model. The displacement map generated describes an X direction displacement and a Y direction displacement for the source image. Using this method, a user need not define a complex mathematical function to attempt to distort his image. The user need only move a number of knots on a mapping from which the computer can derive a spline surface and then calculate the necessary displacement, compression, expansion or erasure of the composite source

image. A user may utilize a mapping with many knots in order to precisely define image distortion. A user may also define a mapping with very few knots in order to introduce distortion to an image, which is less geographically precise.

Claim Objections

3. Claim **2, 10-20, 23, and 27-30** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: Examiner searching for the step of converting the transformed path from a function that describes an entire curve to a function of the form (please see formula on page 34, line 19) that describes a segment of the curve by setting each (please see formula on page 34, line 20) where c is a fixed fraction and the step of a bilinear transform, in combination with the other elements of the claim, was not disclosed by, would not have been obvious over, nor would have been fairly suggested by the prior art of record.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims **1, 3-9, 21-22, and 24-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sayre (US patent no. 5,175,808) in view of applicant's admitted in the background of the present invention (page 1, line 10 to page 3, line 5, hereinafter as "Prior Art").

Re claims **1 and 21**, Sayre had:

A.) Performing a non-affine transform on the path instead of the multiple pixels represented by the path to produce a transformed path (col. 11, line 48 to col. 12, line 2); in other words, Sayre teaches performing a non-affine image transformation on a source image comprising a plurality of points (i.e. pixels) having at least X and Y values. The X and Y values made up a path consisting of values for calculations;

B.) Rendering the transformed path onto the computer screen (col. 1, lines 10-24); in other words, Sayre teaches the system is disclosed in a computer graphics applications. Thus, he is rendering the transformed path onto the computer screen.

Sayre *fails* to specifically disclose describing at least a portion of a base image as a path, the path representing multiple pixels as claimed. However, Prior Art (page 1, line 10 to page 3, line 5) indicates that it's well known to have at least a portion of a base image as a path with the path representing multiple pixels.

Therefore, taking the combined teaching of Sayre and Prior Art as a whole, it would have been obvious to modify Sayre to describe at least a portion of a base image as a path, the path representing multiple pixels as claimed. Doing so would enable pixels within the base image are described using a set of equations known as a path (page 1, line 10 to page 3, line 5).

Re claims **3-4, 8, and 24**, Sayre discloses the portion of the base image as a path comprises describing the portion using a function of order n and 2n (col. 1, lines 46-62). In other words, Sayre teaches the nth order which comprises of any number as in n or 2n. Warping functions can be wholly arbitrary functions.

Re claims **5-7 and 25**, Sayre discloses the portion as a function of order one and three; and a non-affine transform comprises performing a perspective transform (col. 1, lines 46-62). In other words, Sayre teaches the nth order which comprises of any number as in n or 3. Warping functions can be wholly arbitrary functions. As for non-affine transform, Sayre teaches non-affine image transformation.

Re claims **9 and 26**, Sayre discloses the step of approximating the transformed path as a series of lines and rendering each line in the series of lines (col. 12, lines 45-66; figs. 2 and 5a-5d). In other words, Sayre teaches the X and Y tables define the lines.

Re claim **22**, Sayre discloses a smooth curve (col. 6, line 34 to col. 7, line 36). In other words, Sayre teaches a spline surface which corresponds to a smooth curve in computer graphics.

Allowable Subject Matter

6. Claims **31-38** are allowed.

The following is an examiner's statement of reasons for allowance: The present invention relates in general to the transforming and rendering of graphical curves. The closest prior art, Miller (US 5,987,567) teaches a similar system, which also deals with

image matching using curves and lines to generate new images. However, Miller fails to teach the step of converting a function of the form (please see formula on page 43, line 4) that describes a segment of the curves into a function of the form (please see formula on page 43, line 6) that describes a different sized segment of the curve by setting each (please see formula on page 43, line 9) where c is a fixed value that determines the segment size. Additionally, the prior art of record fails to teach or suggest the step of converting a function of the form (please see formula on page 43, line 22) that describes a segment of the curve into a function of the form (please see formula on page 44, line 1) that describes an adjacent segment of the curve by setting each (please see formula on page 44, line 4).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiries

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu-Thao Havan whose telephone number is (703) 308-7062. The examiner can normally be reached on Monday to Thursday from 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (703) 305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

TTH
April 9, 2003

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600